

## REPORT ON MACHINERY.

No. 4921

Received at London Office MON. 17 JAN. 1921

Date of writing Report 29. 11. 1920 When handed in at Local Office 11. 1. 1921 Port of Trieste  
 in Survey held at Trieste Date, First Survey 5 May 1914 Last Survey 22 Nov 1920  
 g. Book. on the Ship S.S. "Gracovia" (Number of Visits)  
 Master P. Leva Built at S. Pocco Trieste By whom built Cantieri S. Pocco S.A.  
 Engines made at Trieste By whom made Stabilimento Tecnico Triestino When built  
 Boilers made at Newcastle & Trieste By whom made Wallsend & Co & Stabilimento Tec. Triestino when made 1920  
 Registered Horse Power Owners Lloyd's Triestino Port belonging to Trieste  
 A Horse Power at Full Power 4200 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Y/N

BINE ENGINES, &c.—Description of Engines Geared Turbines Single reduction No. of Turbines 4.  
 Diameter of Rotor Shaft Journals, H.P. 130"/in. L.P. 130"/in. Diameter of Pinion Shafts 130"/in.  
 Diameter of Journals 130"/in. Distance between Centres of Bearings 694"/in. Diameter of Pitch Circle 145.123"/in.  
 Diameter of Wheel Shaft 360"/in. Distance between Centres of Bearings 1598"/in. Diameter of Pitch Circle of Wheel 3067.368"/in.  
 Diameter of Face 410"/in. (2) Diameter of Thrust Shaft under Collars 135"/in. as per rule 11.56  
 (Fixed with continuous liners) Diameter of same as fitted 12.83"/in. Diameter of Propeller 15'-6" Pitch of Propeller 16'-6"  
 Screw Shafts 2 Diameter of same as fitted 145"/in. Diameter of Rotor Drum, H.P. 350" L.P. 830" Astern 550"  
 Blades 4 State whether Moveable No. Total Surface 46'-5" Diameter of Rotor Drum, H.P. 350" L.P. 830" Astern 550"  
 Thickness at Bottom of Groove, H.P. Solid L.P. 32"/in. Astern Solid Revs. per Minute at Full Power, Turbine 2000 Propeller 95

## PARTICULARS OF BLADING.

H. P. Reaction.				L. P. Reaction.				L. P. ASTERN.			
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.		
EXPANSION .....	14.25 <sup>m</sup> / <sub>in</sub>	398.5 <sup>m</sup> / <sub>in</sub>	13.	33.2 <sup>m</sup> / <sub>in</sub>	896.4 <sup>m</sup> / <sub>in</sub>	2.	Impulse 32.5 <sup>m</sup> / <sub>in</sub>	911.0 <sup>m</sup> / <sub>in</sub>	3		
" .....	23.25 "	396.5 "	13.	42.2 "	914.4 "	2.	" 48.5 "	927.0 "			
" .....	30.25 "	410.5 "	13.	54.2 "	938.4 "	2.	" 61.5 "	943.0 "			
" .....	40.15 "	430.3 "	13.	69.1 "	968.2 "	2.	Reaction 27.0 "	604.0 "	4		
" .....	25.15 "	540.3 "	6.	89.0 "	1008.0 "	2.	" 48.9 "	647.8 "	4		
" .....	34.15 "	588.3 "	6.	113.9 "	1057.8 "	3.	" 86.8 "	723.6 "	4		
" .....	45.0 "	610.0 "	6.	153.7 "	1137.4 "	2.	" 86.8 "	723.6 "	4		
" .....	59.0 "	638.0 "	6.	153.7 "	1137.4 "	3.					

and size of Feed pumps 2 @ 13 1/2" x 10" x 24", 1 @ 6 3/4" x 4 3/4" x 11 1/8".

and size of Bilge pumps 1 duplex 7" x 7" x 8", ballast 10" x 10" x 10", 1 @ 6" x 6" x 6".

and size of Bilge suction in Engine Room 2 @ 2 3/4" x 2 @ 4 3/4", 2 @ 3 1/2" in boiler room.

In Holds, &c. 5 @ 3 1/2" forward, 6 @ 3 1/2" aft.

Bilge Injections 2 sizes 8" Connected to condenser, or to circulating pump Y/N Is a separate Donkey Suction fitted in Engine Room & size 2 @ 3 1/2"  
 Are the bilge suction pipes fitted with roses Y/N Are the roses in Engine room always accessible Y/N  
 All connections with the sea direct on the skin of the ship Y/N Are they Valves or Cocks Both Y/N  
 They fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Y/N Are the Discharge Pipes above or below the deep water line above Y/N  
 They each fitted with a Discharge Valve always accessible on the plating of the vessel Y/N Are the Blow Off Cocks fitted with a spigot and brass covering plate Y/N  
 Pipes are carried through the bunkers Forward hold enditions How are they protected below ceiling Y/N  
 All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Y/N  
 The Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Y/N  
 Screw Shaft Tunnel watertight See hull report Is it fitted with a watertight door Y/N worked from upper deck Y/N  
 See Newcastle Report No. 65-313.

BILERS, &c.—(Letter for record 6 (X) Manufacturers of Steel Shipyard & Co.  
 Heating Surface of Boilers 12735 sq. ft. Is Forced Draft fitted Y/N No. and Description of Boilers 5 Single ended.  
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 12/2/16 & 5/4/16 No. of Certificate 170-1-2-3-4  
 Each boiler be worked separately Y/N Area of fire grate in each boiler 62.9 sq. ft. No. and Description of Safety Valves to  
 boiler 2 direct spring Area of each valve 9.62 sq. ft. Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Y/N  
 Test distance between boilers or uptakes and bunkers or woodwork 6'-0" Mean dia. of boilers 15'-9" Length 12'-0" Material of shell plates 15  
 Thickness 1 1/32" Range of tensile strength 29 1/2 - 33 1/2" Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams d. & lap.  
 seams T.R.D. butts Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 1/16" Lap of plates or width of butt straps 18 1/8"  
 Rivets 86.15 Working pressure of shell by rules 184 lbs. Size of manhole in shell 16" x 12"  
 Attachments of strength of longitudinal joint plates 85.17  
 Compensating ring flanged No. and Description of Furnaces in each Boiler 3 Deighton's Material S Outside diameter 50 3/16"  
 Thickness of plates 19 1/32" Description of longitudinal joint welded No. of strengthening rings 5  
 Working pressure of furnace by the rules 188 lbs. Combustion chamber plates: Material S Thickness: Sides 9/8" Back 9/8" Top 9/8" Bottom 1"  
 of stays to ditto: Sides 7/8 x 9/8" Back 5/8 x 8 1/4" Top 8 x 9" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 184 lbs.  
 Material of stays special hex area at smallest part 2.03" Area supported by each stay 73.5 sq. in. Working pressure by rules 225 lbs. End plates in steam space  
 Thickness 1 1/32" Pitch of stays 25" x 2 1/2" How are stays secured d. nuts Working pressure by rules 181 Material of stays S  
 at smallest part 9.15 sq. in. Area supported by each stay 519 sq. in. Working pressure by rules 183 lbs. Material of Front plates at bottom S  
 Thickness 1 1/16" Greatest pitch of stays 6 1/4" x 8 1/4" Working pressure of plate by rules 185  
 Diameter of tubes 3 Pitch of tubes 4 1/4" x 3 1/16" Material of tube plates S Thickness: Front 1 1/4" x 3/32" Back 3/4" Mean pitch of stays 8 1/2" x 8 3/8"  
 across wide water spaces 14 1/4" Working pressures by rules 348 lbs. Girders to Chamber tops: Material S Depth and  
 Thickness of girder at centre 8 1/4" x 1 1/2" Length as per rule 32" Distance apart 8" Number and pitch of stays in each 209"  
 Working pressure by rules 186 lbs. Steam dome: description of joint to shell None. 10 of strength of joint Diameter  
 Thickness of shell plates Material Description of longitudinal joint Diameter of rivet holes Pitch of rivets  
 Working pressure of shell by rules Crown plates: Thickness How stayed

5210-7801M



See Bmn Report No. 396.

SUPERHEATER. Type *Schmidt's*

Date of Approval of Plan

Tested by Hydraulic Pressure to 650 lb

Date of Test. 6/5/14.

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve 2"

Pressure to which each is adjusted 187 lb.

Is Easing Gear fitted

IS A DONKEY BOILER FITTED? No.

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied: 2 bolts & nuts (or studs & nuts) for each set of rotor bearing, gear wheel bearing, and pinion bearing. One set of coupling bolts for each set used 1/30 of total

of bolts & nuts (or studs & nuts) for each gear case joint, and turbine casing joints. 2 thermometers for oil circulating system. One set of bearing bushes wheel shaft, rotor and pinion shafts. Half set packing ring for each gland of rotor shafts so fitted & half no. of springs fitted. Two thrust pins for main thrust block. Turbine thrust & adjusting bushes with rings complete. One set of adjusting block liners. Sets of feed & help pump valves. A quantity of assorted bolts & nuts, studs, bars, plates, propellers, and propeller shaft. Relief valve springs. Two oil pumps fitted.

The foregoing is a correct description,

STABILIMENTO TECNICO TRIESTINO

Manufacturer.

*W. L. Loney*

Dates of Survey while building: During progress of work in shops -- 1914 May 5, July 7, 9, 14, 29 Aug 18, Sep 18, 19, 21, 23, Oct 5, 8, 10, 14, 20, 21, 23, 26, 27, 31 Nov 10, 11, 13, 18, 19, Dec 17, 19, 22, 24, 28 Jan 9, 19, Feb 26, Mar 5, 11, May 1, 8, 12, 15, 18 Aug 19, Sep 29, Oct 22, 1916 Jan 3, 11, 20, Feb 12, 19, May 1, 3, 6, 13, July 13, 1916 July 24, Oct 10, Dec 1, 1918 Jan 21, 26, May 31, 1919 July 12, 19, Sep 3, Oct 14, Nov 8, Dec 17, 1920 Feb 3, 3, 16, 1921 May 18, June 2, July 2, 20, Aug 26, Sep 2, 14, 16, 22, 23, 24, Is the approved plan of main boiler forwarded herewith *In London*

Dates of Examination of principal parts: Casings 29/11/14 to 1/5/15 Rotors 13/7/16 Blading 2/12/16 Gearing 2/7/20

Rotor shaft 14/10/14 Thrust shafts 27/1/14 Tunnel shafts 7/1/14 Screw shafts 27/4/14 to 30/7/14 Propellers 25/8/20

Stern tube 19/1/16 Steam pipes tested 24/9/20 Engine and boiler seatings 24/7/16 Engines holding down bolts 23/9/20

Completion of pumping arrangements 1/10/20 Boilers fired 12/11/20 Engines tried under steam 7/10/20 to 13/11/20

Main boiler safety valves adjusted 12/11/20 Thickness of adjusting washers *Pr. 8. P. 20. S. 24. C. 8. P. 20. S. 25. S. 82. P. 24. S. 21.*

Material and tensile strength of Rotor shafts *34.7; 34.3; 34.7; 35.4 S. steel.* Identification Mark on Do. *459-4460-6*

Material and tensile strength of Pinion shaft *Wobol steel 43.3 & 43.9 tons* Identification Mark on Do. *989-942 718*

Material of Wheel shaft *S. steel* Identification Mark on Do. *G. D. R. 2/1/20* Material of Thrust shafts *S. steel* Identification Mark on Do. *473*

Material of Tunnel shafts *S. steel* Identification Marks on Do. *463/412 714* Material of Screw shafts *S. iron* Identification Marks on Do. *6844*

Material of Steam Pipes *steel* Test pressure *50 atmos.*

Is an installation fitted for burning oil fuel No. Is the flash point of the oil to be used over 150°F.

Have the requirements of Section 49 of the Rules been complied with

Is this machinery a duplicate of a previous case If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery of this vessel has been built under special supervision and in accordance with the Rules. The materials and workmanship are good and on completion the engines, boilers and auxiliary machinery were examined under working conditions and found satisfactory.

The machinery of this vessel is eligible in our opinion to the notation of + LMC 11-20

Wires and electric light fitted.

The amount of Entry Fee	£ 276	When applied for,	Nov 18 1920
Special	£ 6035	When received,	Nov 26 1920
Donkey Boiler Fee	£		
Travelling Expenses (if any)	£		

Committee's Minute FRI. JAN. 28 1921  
Assigned *+ LMC 11-20*  
*L. D.*

*Geo. J. Munro*  
Engineer Surveyor to Lloyd's Register of Shipping.